Funded by the European Union

AIDA4Edge

UK Research and Innovation

Newsletter of AIDA4Edge – Issue #1

Kick-off meeting at the Faculty of Electronic Engineering in Niš, Serbia

The kick-off meeting of the consortium for the project "Twinning for Excellence in Adaptive Edge AI," abbreviated as AIDA4Edge, was held at the Faculty of Electronic Engineering in Niš on October 28-29, 2024. This project is funded under the HORIZON-WIDERA-2023-ACCESS-02 call by the European Research Executive Agency (REA), under the auspices of the European Commission.

The consortium consists of the Faculty of Electronic Engineering in Niš as the project coordinator, the Institute for High-Performance Microelectronics (IHP) from Frankfurt (Oder), Germany, the University of Ferrara, Italy, and the University of Manchester, United Kingdom.

The meeting was opened by Prof. Jelena Nikolić, who welcomed the participants on behalf of the consortium. Following her introduction, Prof. Vladimir Ćirić, Dean of the Faculty of Electronic Engineering in Niš, expressed his pleasure that the faculty is leading this project and extended a warm welcome, wishing for successful collaboration. Representatives from the foreign partner institutions, who had traveled to Niš for the meeting, also addressed the attendees. Finally, Ms. Raquel Fernandez Horcajada, representing the project's funding agency, addressed the participants via video link.

The working sessions of the meeting, held on the same day and the following day, focused on important topics related to the project's implementation. This project will enable collaboration with researchers from leading institutions, the exchange of knowledge and expertise, and the creation of conditions to strengthen the capacity of the team at the Faculty of Electronic Engineering in Niš in the development and implementation of artificial intelligence algorithms for edge devices with limited resources in terms of memory and processing power.

Launch of official website for AIDA4Edge project featuring AI-generated illustrations

The official website for the AIDA4Edge project has been launched on November 20, 2024!

www.aida4edge.elfak.rs

Promotion of AIDA4Edge at the IEEESTEC International Students Projects Conference

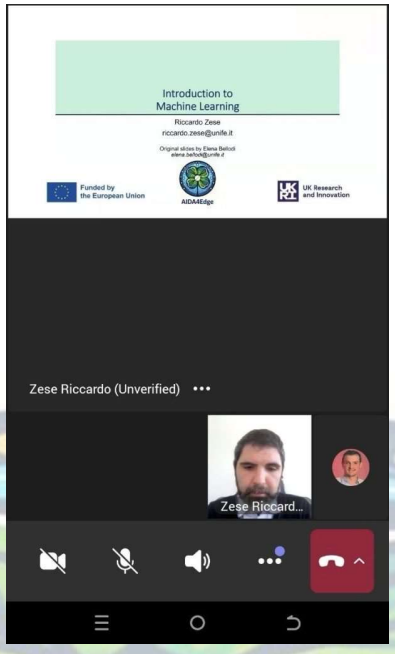
We have officially began presenting our AIDA4Edge project to the broader community. At the IEEESTEC International Students Projects Conference, held in Niš on November 28, 2024, we had the privilege of introducing our project to talented students and scholars from across Serbia. Our team members, Prof. Jelena Nikolić and Assistant Prof. Miloš Marjanović, provided an insightful overview of the project's vision, objectives, and anticipated impact. They emphasized its potential contributions to the rapidly developing field of Edge AI.

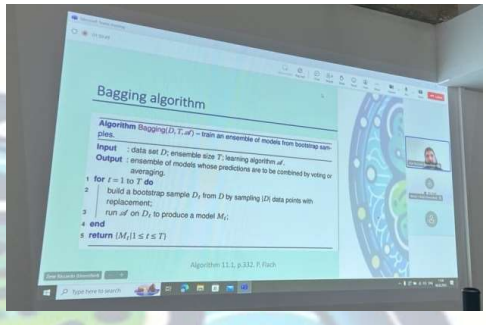
By engaging with students and scholars, we aim to inspire innovative ideas, spark curiosity, and encourage young people to actively participate in this transformative field, which plays a pivotal role in driving technological advancements and shaping everyday life.

Project Promotion at the 23rd "Step into Science" Conference in Petnica, Serbia

The "Step into Science" conference, held annually, brings together alumni from various programs organized by the Petnica Science Center for high school students, as well as representatives from partner organizations across the region. This year, the conference celebrated its 23rd edition from December 13 to 15, 2024.

On Saturday, the guest session featured presentations from the Faculty of Electronic Engineering in Niš, including "Twinning for Excellence in Adaptive Edge AI – AIDA4Edge" by Miloš Marjanović. For several years, the Faculty of Electronic Engineering has collaborated with Petnica SC and IEEE, with faculty members giving guest lectures at Petnica seminars and participating in their conference. In return, Petnica participants present their projects at the IEEESTEC conference, further promoting the STEM concept in education. Petnica SC is one of the stakeholders of our project.





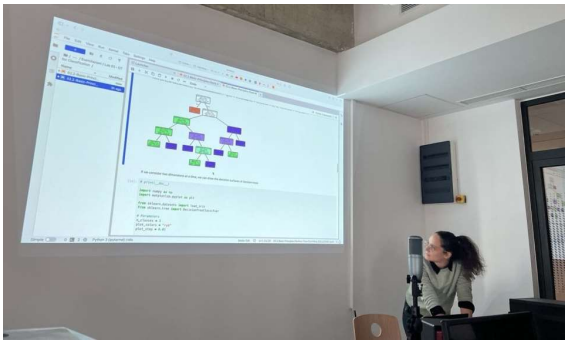
Expert Visit from UNIFE at FEEUNI

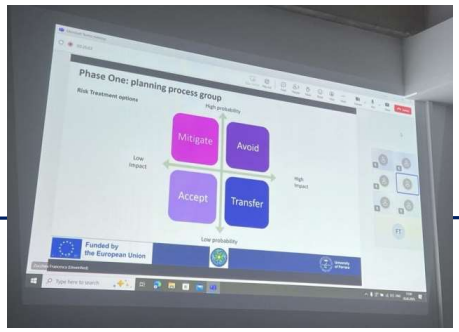
On February 5-6, 2025, the Faculty of Electronic Engineering, University of Niš (FEEUNI), hosted an expert visit of our partners from the University of Ferrara (UNIFE) as part of the AIDA4Edge Project realization.

During this visit, we had the pleasure of welcoming Alice Bizzarri, Research Fellow from UNIFE, who conducted laboratory exercises in Python focused on the software implementation of machine learning algorithms. These hands-on sessions provided participants with practical experience in applying Machine Learning techniques to real-world problems.

Prof. Riccardo Zese delivered an online lecture, covering the theoretical foundations of Decision Trees, Random Forests, Boosting, and Clustering, emphasizing their applications within the AIDA4Edge Project.

The combination of theoretical insights and practical exercises provided an engaging learning experience, allowing Ph.D. students and researchers from FEEUNI to deepen their understanding of ML techniques. This visit further strengthened the collaboration between FEEUNI and UNIFE, fostering knowledge exchange and paving the way for new innovations in AI and Edge computing.



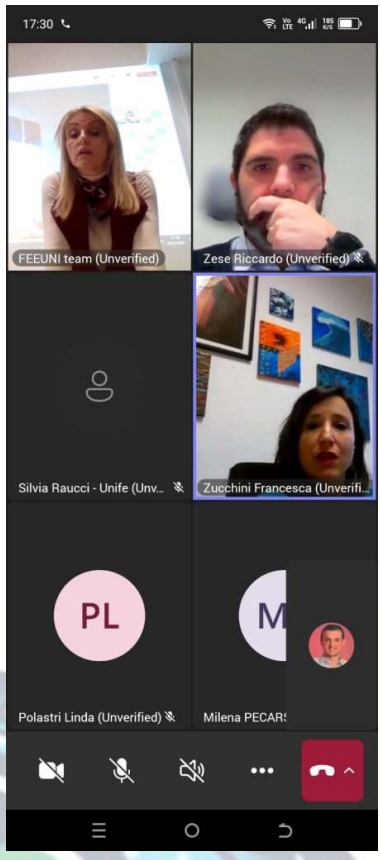


Online Lecture from UNIFE to FEEUNI Team of the AIDA4Edge Project

As a part of the AIDA4Edge Project realization, team members from the Faculty of Electronic Engineering, University of Niš (FEEUNI) had the pleasure of attending an online lecture delivered by Francesca Zucchini from the University of Ferrara (UNIFE).

The lecture covered essential topics in project management, including consortium coordination, grant agreement preparation, and project organization strategies planning. This session provided valuable insights into ensuring the efficient execution of project activities.

We appreciate Francesca Zucchini's contribution and look forward to future sessions that will further enhance our knowledge and strengthen the implementation of the AIDA4Edge Project.



New Promotional Materials for Our Project!

We have created promotional materials for our project! They will help us effectively communicate our vision and engage with our partners and the broader community.

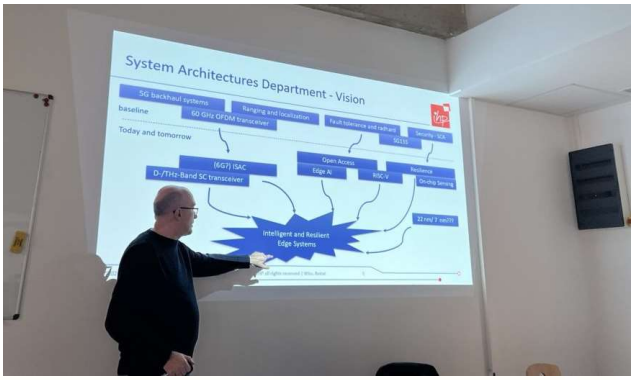
Expert Visit from IHP to FEEUNI Team of the AIDA4Edge Project

As a part of the AIDA4Edge Project, the Faculty of Electronic Engineering, University of Niš (FEEUNI) had the honor of welcoming Prof. Miloš Krstić from the IHP – Leibniz Institute for High Performance Microelectronics.

Prof. Miloš Krstić delivered an in-depth lecture on Hardware architectures and technologies for AI accelerators, focusing on the implementation of AI acceleration using ASICs, FPGAs, and RRAM-based technology. He provided a comprehensive overview of the advantages and limitations of these hardware platforms, highlighting their role in optimizing AI performance.

Beyond the lecture, the expert visit also included a discussion on Strategic Management with Prof. Miloš Krstić, providing valuable perspectives on effective research planning and innovation strategies.

This visit strengthened the collaboration between FEEUNI and IHP, fostering knowledge exchange and innovation in AI hardware design.



Short-term training visit to the IHP institute

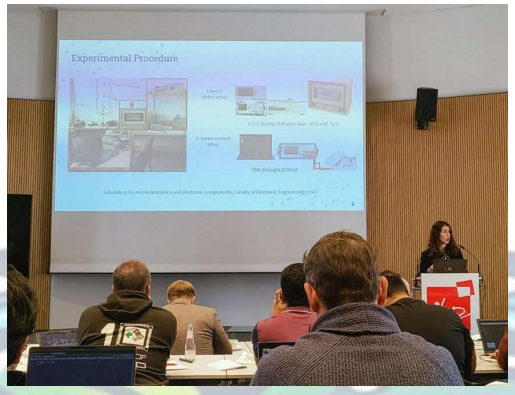
During a short-term training visit to the IHP institute, AIDA4Edge project team participated in the TAICHIP Winter School, held from February 10 to 12, 2025, at IHP in Frankfurt (Oder), Germany. This event provided a valuable opportunity for researchers to gain deeper insights into chip fabrication, hardware security, and reliability while connecting with leading experts in the field.

During the Winter School, participants had the chance to explore advanced wafer technologies and the latest innovations in chip production. The event also featured discussions on the critical aspects of hardware security and the impact of reliability in high-performance systems. One of the highlights of the event was the visit to IHP's state-of-the-art laboratories, where attendees witnessed cutting-edge technologies in action.

Sandra Veljković, a PhD student from the AIDA4Edge project, gave a presentation on the topic: *Impact of Bias Temperature Stress, Irradiation, and Self-Heating Effects on Power VDMOS Transistor*. Her work contributed to the technical discussions on hardware reliability and performance.

Beyond the technical sessions, the Winter School served as an excellent platform for networking and knowledge exchange. Researchers from various institutions had the opportunity to engage in stimulating discussions, share ideas, and foster collaborations in the fields of microelectronics, hardware security, and adaptive edge AI systems.

The AIDA4Edge team would like to express its gratitude to the organizers and all participants who contributed to making this event a tremendous success. This experience has further strengthened the ties within the research community and provided valuable insights that will drive innovation in adaptive edge AI technologies.



Pool of Stakeholders Created

The initial Pool of Stakeholders was created on February 26, 2025. https://aida4edge.elfak.rs/pool-of-stakeholders/

Groups of external stakeholders	Stakeholders	Contact Persons	Logo
Members of the EAB	• Prof. Vlado Delić, University of Novi Sad, Faculty of Technical Sciences • Vladimir Despotović, PhD, Luxembourg Institute of Health • Prof. Željko Đurović, University of Belgrade, Faculty of Electrical Engineering • Miloš Marković, ProMetronics GmbH		
Scientific Community	The Institute for Artificial Intelligence Research and Development of Serbia	Max Talanov, PhD	
	Science and Technology Park Niš	Ivan Pavlović	
	Computational Intelligence Chapter of Serbia and Montenegro IEEE Section	Prof. Zarko Cojbašić	
	University of Niš	Vice-Rector Prof. Dragan Djordjević	
	University of Novi Sad, Faculty of Technical Sciences	Nikola Simić, PhD	
	Faculty of Mechanical Engineering, University of Ljubljana	Prof. Jurij Prezelj	
Teams from Other Twinning Projects	Team of the TAICHIP project	Prof. Maksim Jenihhin	
	Team of ARTIFACT project	Milan Stojković, PhD	
	Team of TWIN-RELECT	Prof. Christos Sotiriou	
Educational Institutions	University of Niš, Faculty of Science and Mathematics	Prof. Marko Petković	
	"Ss. Cyril and Methodius" University in Skopje, Faculty of Electrical Engineering and Information Technologies (FEEIT)	Prof. Zivko Kokolanski	
	University of Kragujevac, Faculty of Technical Sciences Čačak	Assistant Prof. Đorđe Damnjanović	
	Petnica Science Center	Prof. Stanislav Milošević	
	Community of Electrical Engineering Schools of Serbia	Prof. Nebojša Sokolović	
	Technical school "Mija Stanimirović" Niš	Prof. Aleksandar Stevanović	
	Technical school "Nikola Tesla" Niš	Prof. Nebojša Sokolović	
	Grammar school in Knjaževac	Prof. Miljan Jeremić	
	Center for the Promotion of Science - Science Club Niš	Davor Dejković	
	Center for the Promotion of Science - Science Club Leskovac	Olivera Ivanović	
Decision-Makers	City of Niš	Dragana Nenadov Stanković, Assistant Mayor for Economic Development and Investments	
Business and Industry Representatives	Acorai	Filip Peters	ACORAI
	INNOFEIT - Skopje	Prof. Zivko Kokolanski	INNOFEIT
	Code 3 Profit	Bratislav Predić, PhD	Code3Profit
	Beehold (Science and Technology Park Niš)	Petar Pejić	Beehold
	PocketSymhphony	Stefan Sretić, D.A.	PocketSymphony
General Community	Media and Communication Platforms	See examples below	
	RTS- Public News agency Serbia and RTS Science	https://www.rts.rs/tv/rts-nauka.html	
	European house- EU info center	https://evropskakuca.rs/nis/	Evropska kuća
	Media reform center	https://mediareform.rs/	MEDIA REFORM
	Juzne vesti	www.juznevesti.com	južne vesti
	TV Zona	https://tvzonaplus.rs/	zona HD PLUS
	Non-Governmental Organizations (NGOs)	See examples below	
	SICEF- Student's Innovation Center	www.sicef.info	sicef
	BEST Nis- Board of European Students of Technology	https://bestnis.rs	
	ESN Nis- European Students Network	https://accounts.esn.org/section/rs-nisx-esn	
	Mpeeria- Think thank devoted to society and policy development	Milena Pecarski, https://mpeeria.org/	MPEERIA
	General Public Interested in Science and Innovation	See examples below	
	Centar za promociju nauke- Centre for science promotion	https://www.cpn.edu.rs/	

We look forward to working closely with our stakeholders and building meaningful, productive relationships in the time ahead!

Publications under the AIDA4Edge Project

As part of the AIDA4Edge project, our team has contributed to several high-quality scientific publications:

1. Jelena R. Nikolic, Zoran H. Peric, Aleksandra Z. Jovanovic, Stefan S. Tomic, Sofija Z. Peric, "Performance Analysis of Two 8-Bit Floating-Point-based Piecewise Uniform Quantizers for a Laplacian Data Source", *Elektronika Ir Elektrotechnika*, Vol. 31, No. 1, pp. 56-61, 2025. [SCI/SCIe journal] https://doi.org/10.5755/j02.eie.37430

2. Snežana Djorić-Veljković, Emilija Živanović, Vojkan Davidović, Sandra Veljković, Nikola Mitrović, Goran Ristić, Albena Paskaleva, Dencho Spassov, Danijel Danković, "Recovery Analysis of Sequentially Irradiated and NBT-Stressed VDMOS Transistors", *Micromachines*, Vol. 16, No. 1: 27, 2025. [ranked between the top 30% and 60% of SCI/SCIe journals] https://doi.org/10.3390/mi16010027

3. Jure Murovec, Jurij Prezelj, Dejan G. Ćirić, Marko M. Milivojčević, "Zero-Crossing Signature: A Time-Domain Method Applied to Diesel and Gasoline Vehicle Classification", *IEEE Sensors Journal*, Vol. 25, No. 3, pp. 5128-5138, 2025. [ranked within the top 30% of SCI/SCIe journals] https://doi.org/10.1109/JSEN.2024.3516876

4. Zoran Perić, Bojan Denić, Milan Dinčić, Sofija Perić, "An Approximate Closed-Form Expression for Calculating Performance of Floating-Point Format for the Laplacian Source", *Informatica*, Vol. 36, No. 1, pp. 125-140, 2025. [ranked within the top 10% of SCI/SCIe journals] https://doi.org/10.15388/25-INFOR587

Special Session on Hardware and Software Solutions for Edge AI Applications

We are pleased to announce a Special Session on Hardware and Software Solutions for Edge AI Applications at the upcoming IEEE MIEL 2025 conference:
https://miel.elfak.ni.ac.rs/SpecialSession

Call for Papers – Special Session on Hardware and Software Solutions for Edge AI Applications at IEEE MIEL 2025

We are pleased to announce a **Special Session on Hardware and Software Solutions for Edge AI Applications** at the upcoming **IEEE MIEL 2025** conference. This session will focus on the cutting-edge advancements, emerging challenges, and practical applications of Artificial Intelligence at the Edge.

As AI-driven technologies are increasingly deployed in real-time, resource-constrained environments, the demand for efficient, resilient, and low-latency edge AI models is more critical than ever. This special session invites contributions that explore, but are not limited to, the following topics:

- Optimization techniques for Edge AI models
- Quantization and compression strategies for Edge AI
- Efficient and reliable hardware accelerators tailored for Edge AI
- AI-powered embedded systems and IoT solutions
- Enhancing privacy, security, and energy efficiency in Edge AI implementations
- Neuromorphic computing for Edge AI
- Hybrid Artificial Neural Network (ANN) and Spiking Neural Network (SNN) models
- Dynamic neural network models and implementation
- Federate learning for Edge AI
- Tiny machine learning (tinyML)
- Hardware/Software Co-Exploration for Neural Architectures for Edge AI
- Analogue computing
- In- or near-memory processing
- Neural architecture search
- Integrated environments for end-to-end development.

We invite researchers, industry professionals, and practitioners to submit original research, case studies, and innovative solutions that address the future of AI at the Edge.

Conference Dates: October 13th-16th, 2025
Location: Niš, Serbia
Important Dates:

April 25, 2025 Deadline for Receipt of Abstracts
June 20, 2025 Notification on Acceptance of Papers
September 01, 2025 Deadline for registration
September 05, 2025 Deadline for Receipt of Papers
September 29, 2025 Dispatch of Conference Program

For detailed submission guidelines and additional information, please visit the official conference website: https://miel.elfak.ni.ac.rs/

We look forward to your valuable contributions and to advancing the future of AI at the Edge!

Strengthening Collaboration: Our Team at the "Capacity Building for the Evaluation of Science and Technology Projects" Workshop

We are pleased to share that our team members, Prof. Dejan Ćirić and Teaching Assistant Sandra Veljković, participated in the workshop "Capacity Building for the Evaluation of Science and Technology Projects", organized by our stakeholder, European House – EU Info Center, and held in Niš on April 2, 2025.

https://evropskakuca.rs/dogadjaj/radionica-izgradnja-kapaciteta-za-evaluaciju-naucno-tehnoloskih-projekata/

In addition to an excellent opportunity for networking and strengthening our collaboration with our stakeholder, we also had the chance to briefly present our AIDA4Edge project and introduce it to a wider audience.

We look forward to future events of this kind, as they are always highly engaging and insightful!

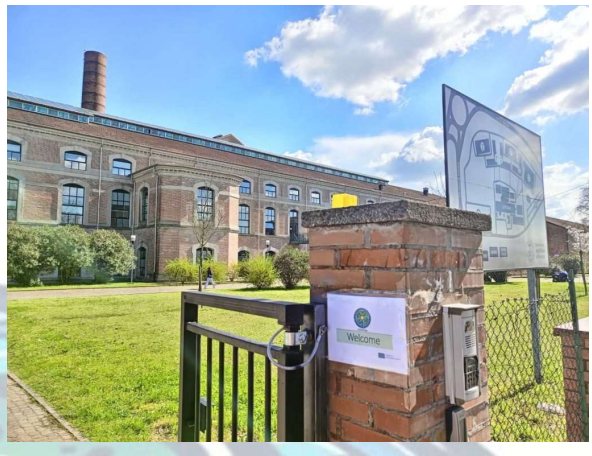
Short-term training visit of FEEUNI staff to UNIFE

A part of our FEEUNI team, Prof. Jelena Nikolić, Prof. Milan Dinčić, Prof. Aleksandra Jovanović, Prof. Dejan Ćirić, Prof. Tatjana Nikolić, Asst. Prof. Goran Nikolić, Teaching Assistant Nikola Vučić, and Junior Researcher Sofija Perić, visited the University of Ferrara (UNIFE) for short-term training as part of the AIDA4Edge Project activities.

This visit featured expert lectures from UNIFE and guest lectures from the FEEUNI team, covering key topics in deep learning, quantization, and AI hardware architectures.

UNIFE Lectures:

- Prof. Riccardo Zese
  – *Introduction to Neural Networks and Multi-Layer Perceptron*
  – *Introduction to Convolutional Neural Networks*
  – *Recurrent Neural Networks*
- PhD Alice Bizzarri
  – *Notable Applications of Convolutional Neural Networks*
  – *Introduction to the PyTorch and TensorFlow Frameworks with Practical Session on implementation of Neural Networks*
  – *Practical session on Convolutional Neural Networks*
  – *Video Management and Generative Models*
  – *Practical Session on Autoencoders*
- Francesca Zucchini
  – *Project Management and Grant/Consortium Agreement Preparation*

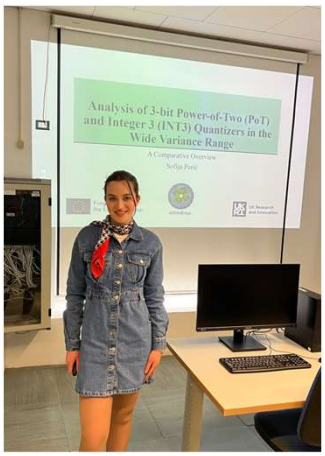


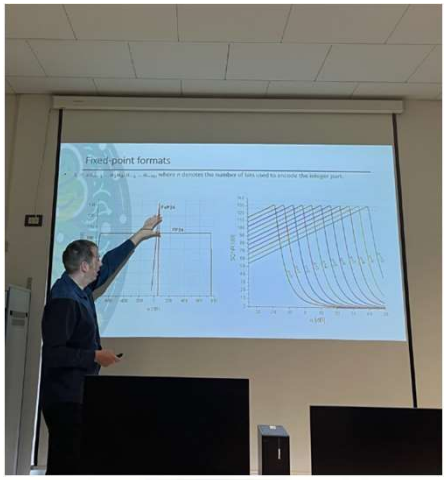
Short-term training visit of FEEUNI staff to UNIFE

FEEUNI Guest Lectures:

- Prof. Jelena Nikolić – *Fundamentals of Quantization*
- Prof. Tatjana Nikolić – *Microprocessors in the AI Era: Evolution, Trends, and Challenges*
- Prof. Aleksandra Jovanović – *Real to Integer Conversion Based on Uniform Quantization – Part I*
- Prof. Milan Dinčić – *Real to Integer Conversion Based on Uniform Quantization – Part II*
- Junior Researcher Sofija Perić – *Analysis of 3-bit PoT and INT3 Quantizers in the Wide Variance Range*
- Teaching Assistant Nikola Vučić – *Golomb-Rice Coding for Floating-Point Format with 8 bits*
- Prof. Dejan Ćirić – *Acoustic Classification of Vehicle Fuel Types: Supervised and Unsupervised Approaches*

This visit provided a valuable opportunity for expanding knowledge in AI, machine learning, and quantization techniques, while also strengthening the collaboration between the FEEUNI and UNIFE teams.





Thank you for your interest in the AIDA4Edge project. We look forward to sharing more updates with you in the future. Stay connected!
www.aida4edge.elfak.rs

Leibniz Institute for High Performance Microelectronics

University of Ferrara

The University of Manchester

Funded by the European Union

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